Virginia Academy of Science 2015
Fall Undergraduate Research Meeting

their faculty mentors, develop and submit research grant applications in early October and subsequently present posters outlining their proposed research projects at the Fall Undergraduate Research Meeting in late October. The VAS President-Elect serves as the coordinator for the Fall Undergraduate Research Meeting.

This year 34 Undergraduate Research Grant Applications were submitted by 52 students, in conjunction with their mentors (20 total), from 11 Virginia colleges and universities. Approximately half of the applications were submitted by individual students; the remainder of the applications were submitted by teams of 2 or 3 students.

The Fall Undergraduate Research Meeting was held in the L. Douglas Wilder Building at Virginia State University in Petersburg, VA on Saturday, October 24, 2015. The total attendance at this meeting was 85 (a record for the Fall Meeting). During the morning session, the judges met with the student presenters at each of the 34 posters. The students gave a brief summary of their proposed research project/poster and then responded to questions from the judges.

During the Lunch Break, the judges met to select the recipients of the 2015-2016 Undergraduate Research Grant Awards ($500 each). The final selection of the recipients was based on the judges' evaluations of the previously submitted grant applications and the posters presented at the Fall Meeting, as well as the responses of the students to their questions.

At the beginning of the afternoon session, attendees were welcomed to Virginia State University by David Crosby (Cooperative Extension and VAS Immediate Past President) and Franklin Jackson (Associate Dean, Cooperative Extension). Craig Bayse from the Dept. of Chemistry & Biochemistry at Old Dominion University was the invited speaker. His presentation topic was *Crossing between Art and Science: How Chemistry Can Answer Questions about a 16th Century Painting.*

At the end of the afternoon session, VAS President-Elect and Program Chair for the 2015 Fall Undergraduate Research Meeting Deborah Neely-Fisher (Reynolds Community College) announced the recipients of 2015-2016 Undergraduate Research Grants ($500). The recipients of the five grants were also awarded student membership in the Virginia Academy of Science for 2016 and expected to present the results of their completed research at the 2016 VAS Annual Meeting in May at University of Mary Washington in Fredericksburg.

Participating Institutions

Christopher Newport University
Eastern Mennonite University
George Mason University
James Madison University
Liberty University
Longwood University
Northern Virginia Community College
Virginia Commonwealth University
Virginia Military Institute
Virginia State University
Virginia Polytechnic Institute & State University

Judges

Dr. Birkita Bradford, College of Agriculture, Virginia State University
Dr. David Crosby, Cooperative Extension, Virginia State University
Dr. Pieter deHart, Department of Biology, Virginia Military Institute
Dr. Leonard Githinji, Cooperative Extension, Virginia State University
Dr. Sujan Henkanaththegedara, Department of Biological & Environmental Sciences, Longwood University
Dr. Ngowari Jaja, College of Agriculture, Virginia State University
Debra Jones, College of Agriculture, Virginia State University
Dr. Roman Miller, Biology Department, Eastern Mennonite University
Dr. Deborah Neely-Fisher, School of Science, Mathematics & Engineering J. Sargaent Reynolds Community College
Dr. Deborah O'Dell, Department of Biological Sciences, University of Mary Washington
Dr. Vitalis Temu, College of Agriculture, Virginia State University
Dr. David Torain, Department of Mathematics, Hampton University
Dr. Yixiang Xu, College of Agriculture, Virginia State University

VAS also extends special thanks to the administration, faculty and staff of Virginia State University for hosting the VAS 2015 Fall Undergraduate Research Meeting. Catering for this event was provided by Thompson Hospitality at Virginia State University.

Undergraduate Research Grants Awarded

Meghan S. Delp, Department of Animal & Poultry Sciences, Virginia Polytechnic Institute & State University
Mentor: Mark A. Cline

Project title: **Elucidating the Central Anorexigenic Mechanism of Alpha-melanocyte Stimulating Hormone**. We propose to elucidate the central mechanism of alpha-melanocyte stimulating hormone (α-MSH) using the chick as a model. A c-Fos immunohistochemistry assay, whole hypothalamus mRNA extraction, and individual hypothalamic nuclei mRNA extraction will be conducted. These procedures provide insight into the neuronal circuits regulating the anorexigenic effect of α-MSH.

Justin M. Doran, Department of Biology, Virginia Military Institute
Mentor: Pieter deHart

Project title: **Habitat-mediated Differences in the Isotopic Signatures of Arachnids**. Our project aims to determine the consequences that differing habitats have on arachnids' eating behaviors. In order to accomplish this, we will utilize stable isotope analysis to quantify trophic levels on which each is operating. We will also compare varying species in both habitats.

Angel Jair Gutarra-Leon and Vincent Cordrey, Dept. of Engineering, Northern Virginia Community College
Mentor: Walerian Majewski

Project title: **Experiments with the Electrodynamic Wheel.** The objective of the experiment is to find a conductor that is best suited for levitation by measuring differences in the lift to drag ratio of different conductors as material, design, and shape are varied. We will also be measuring how the different conductors respond to changes in temperatures and how much that affects levitation.

Dominique Richburg and Jorge Tovar, Department of Biology & Chemistry, Liberty University
Mentor: Andrew Fabich

Project title: ***Citrobacter rodentium* Competes with Commensal *E. coli* to Cause Inflammation and Alter the Intestinal Biome**. *Citrobacter rodentium* pathogenesis is commonly used as a model for studying *E. coli* in humans, since it shares 67% of its genes with the pathogenic strains of *E. coli* (EPEC and EHEC). By studying the mechanisms and genes involved in pathogenic adhesion in *C. rodentium*, it will be easier to prevent or find a cure for illness (like Crohn's disease, ulcerative colitis and colonic tumorigenesis) caused by pathogenic *E. coli* strains.

Joshua Sellwood and Nicolas Terreri, Department of Biology & Chemistry, Liberty University
Mentor: Michael Price

Project title: **Identifying Phenotypes in Overexpression of Putative Genes in *Cryptococcus neoformans***. To identify the factors responsible in or of *Cryptococcus neoformans* that allow it to successfully utilize carbon via glycolysis after deletion of pyruvate kinase gene PYK1 to broaden understanding of carbon source utilization in this human pathogen.